

cannibals, but indulge in the custom in order to show their complete mastery over their enemies, and not from a preference for human flesh. New Britain was coasted entirely and crossed several times. The interior is hilly, the loftiest point being 2,500 feet high. It is well populated, and the natives expressed the usual surprise at seeing white men for the first time. The tribe at Blanchi Bay informed the travellers of another tribe at some distance from the coast, who were provided with caudal appendages of an exceedingly remarkable character, and promised to obtain a specimen before the next visit of the brig. At another place, the wealthier families among the natives were accustomed to confine their daughters for several years before the attainment of puberty in tabooed houses, not allowing them to put foot upon the ground during the whole period. A superior tribe was encountered at Spacious Bay, with lighter complexions and straighter hair than their neighbours. Both sexes wore partial clothing. Large collections were brought back illustrating most fully the geology, the fauna, and the rich tropical flora of the islands.

M. CLEMENT GANNEAU, who has recently been in London to study the Semitic monuments in the British Museum, writes to the *Times* animadverting on the complete want of system in their arrangement. The Semitic remains are scattered among other collections in such a way as to make their examination a work of the greatest difficulty, whereas were they properly classified and arranged by themselves they would form a Semitic Room without a rival.

THE Geographical Society of St. Petersburg has received a telegram from Prjevalsky announcing that he has crossed the Thian Shan, and, on October 14, was fifty versts from Karashar. The country he was then in is a desert.

M. WADDINGTON, French Minister of Public Instruction, is busy fitting up a large pedagogical museum, which will be located in the hotel of the Ministry, and be open to the inspection of any scientific men interested in the progress of pedagogy.

THE first portion of the German *Jahresbericht über die Fortschritte der Chemie*, for 1875, containing 480 pages, about one-third of the complete work, has just been issued. General and physical chemistry receives 150 pages, inorganic chemistry, 80 pages, while the remainder of the number is devoted to organic chemistry, which will also occupy the greater portion of the second number. Prof. Fittica, of Marburg, assumes, with the volume for 1875, the chief editorial supervision, and is assisted by the following able corps:—K. Birnbaum, C. Böttiger, C. Hell, H. Klinger, A. Lauberheimer, E. Ludwig, A. Michaelis, A. Naumann, F. Nies, H. Solkowski, Z. H. Skraup, and K. Zöppritz. Complete sets of the *Jahresbericht* are difficult to obtain now as seven years' numbers are out of print. A perfect set from 1847 to the present date, with the two registers, costs from 500 to 600 marks in Germany. The editor requests from the authors of chemical articles separate copies of their communications in order to lighten the labour of classification and compilation.

WE have received vol. i. of the *Proceedings* of the Davenport (Iowa, U.S.) Academy of Natural Sciences. This Academy had a very small beginning in 1867, but is now in a flourishing condition. The volume contains the proceedings from 1867 to 1876, and includes some papers of real value, especially on mound exploration. The number of scientific societies in the U.S. issuing publications containing papers of genuine scientific importance is now large, and constantly increasing.

THE artificial lighting of rooms affects the human system, on the one hand, through the change produced in the composition of the air by gases of combustion, and on the other through rise of temperature. These influences have lately been examined by M. Erismann (*Zeitschrift für Biologie*). In a part of the laboratory 10 cubic metres' capacity, inclosed by wooden and glass

walls, various materials were burnt eight hours, viz., stearine candles (six at a time), rape oil, petroleum, and ordinary gas, and the air was drawn off at different heights and analysed. The results do not pretend to absolute exactness, but a comparison of them is interesting. The tables first show that under all circumstances, and with all sorts of artificial lighting, the air of an inclosed space contains more carbonic acid and organic carbon-containing substances than in absence of such illumination; still, in these experiments the carbonic acid was never greater than 0·6 or 0·7 per 1,000, while the proportion of other carbon compounds was very variable, so that the amount of carbonic acid gives no exact criterion for the vitiation of the air. The CO₂ actually found in the air was only a very small fraction of that produced by the combustion; by far the greatest part must have been carried away by the natural ventilation. In comparing the four materials, the proportion of CO₂ and other carbon compounds was reduced to a light strength of six normal candles. It appeared that the petroleum, with lamp of good construction, communicates to the atmosphere, not only less CO₂, but (what is much more important) fewer products of imperfect combustion than the other lighting materials; and, further, that stearine candles, with the same light-strength, vitiate the air most. As to temperature, that of the lower layers of air, up to a height of 1·5 metres, rose very little during the eight hours, about 2° to 3° on an average, while the upper layers increased considerably in temperature, especially just under the ceiling; this increase, in the case of ordinary gas, rape oil, and petroleum, was 10·5° to 10·8°, in that of candles only 4°. If, however, we take into account the photometric light-effect of the flames during the experiment, it is found that, with equal light-strength, rape oil and gas raise the temperature considerably more than petroleum, and the action of the latter, indeed, came to about that of the candles.

THE additions to the Zoological Gardens during the past week include an American Black Bear (*Ursus americanus*) from North America, presented by Mr. W. Stead; a Common Partridge (*Perdix cinerea*), European, presented by Mr. H. Laver; a Razor-bill (*Alca torda*), European, presented by Mr. W. Thompson; two Common Swans (*Cygnus olor*), a Common Cross-bill (*Loxia curvirostra*), European, purchased.

SOCIETIES AND ACADEMIES

LONDON

Zoological Society, January 2.—Prof. Newton, F.R.S., vice-president, in the chair.—Prof. Newton exhibited and made remarks on a specimen of a variety of the guillemot (*Alca troile*) with yellow bill and legs, which had been lately shot by Mr. J. M. Pike on the south coast of England.—Prof. Garrod, F.R.S., read a paper on the osteology and visceral anatomy of the Ruminantia, in which many facts concerning the anatomy of the Cervidae and the Cavicornia were brought forward, especially with reference to the shape of the liver and the structure of the generative organs in these animals. Among the most important of these was the observation that the uterine mucous membrane of the musk-deer (*Moschus moschiferus*) presents no indications of the presence of cotyledons, the contrary being the case in all other ruminants. Prof. Garrod likewise made a suggestion as to a proposed method of expressing the relations of species by means of formulae.—A paper by Messrs. Sclater and Salvin was read containing the descriptions of eight new species of South American birds, namely (1), *Euphonia finschi*; (2), *Pheucticus crissalis*; (3), *Octhaca leucometopa*; (4), *Octhaca arenacea*; (5), *Chloronoperes dignus*; (6), *Celeus subflavus*; (7), *Chamaepelia buckleyi*; (8), *Crax erythrogaster*.—Mr. R. Bowdler Sharpe read a paper on some new species of warblers from Madagascar, which had been recently added to the collection in the British Museum, and were proposed to be called *Apalis cerviniventris*, *Baeocera flaviventris*, and *Dromaeocercus brunneus*, the last-named being a new genus, from Madagascar.—A communication was read from Mr. G. S. Brady, containing notes on fresh-water mites which had been obtained from lakes and ponds in England and Ireland.

Royal Microscopical Society, January 3.—Charles Brooke, F.R.S., vice-president, in the chair.—Dr. Wallich read a paper

on the development, reproduction, and surface markings of diatoms, illustrating the subject by drawings.—An interesting paper was read by Mr. Stephenson descriptive of some very curious diffraction experiments, by Prof. Abbe, from which it appears that the use of "diffraction gratings" in connection with stops of various kinds placed above the back combination of the objective were competent to produce precisely the same appearances as were observed in certain well-known test objects.—Some mercury globules mounted in balsam were exhibited under the micro-polariscope, by Mr. Stephenson for Mr. Slack, producing some very curious and interesting optical effects.

MANCHESTER

Literary and Philosophical Society, November 28, 1876.—Edward Schunck, F.R.S., vice-president, in the chair.—The Radiometer. Mr. Harry Grimshaw, F.C.S., communicated the following summary of an extract from the "Panorama of Science and Art," published by Nuttall, Fisher, and Dixon, 1813, 2 vols.:—"After alluding to Boerhaave's experiment on the influence of the 'burning glass' on the motion of the 'compass,' the extract goes on to describe a radiometer constructed by Mitchell, which seems to have been constructed as follows:—A thin plate of copper one inch square was attached to one end of a fine 'harpsichord' wire ten inches long. This was balanced on an agate suspension, and the little copper plate was counterpoised by a grain of shot at the other extremity of the wire. As a result of experiments with the instrument, it was found that the influence of the rays of the sun focussed by a concave mirror two feet in diameter, caused a revolution of one-millionth of an inch in a second. The instrument was protected by some sort of glass shade. The same motion was produced in a vacuum."—Note on a manganese ore from New South Wales, and on a specimen of native silver from New Zealand, by M. M. Pattison Muir, F.R.S.E.

December 12, 1876.—E. W. Binney, F.R.S., president, in the chair.—The lowest amounts of atmospheric pressure during the last sixteen years as observed by Thomas Mackereth, F.R.A.S., F.M.S.—On a mineral water from Humphrey Head, near Grangeover-Sands, North Lancashire, by Joseph Barnes and Harry Grimshaw, F.C.S.—On ternary differential equations, by Sir James Cockle, F.R.S., Corresponding Member of the Society.

December 26, 1876.—E. W. Binney, F.R.S., president, in the chair.—Notice of the "Almanacke for XII Yere," printed by Wynkyn de Worde in 1508, by William E. A. Axon, M.R.S.L.—A notice of some organic remains from the Manx schists, by E. W. Binney, F.R.S., president.—On changes in the rates of mortality from different diseases during the twenty years 1854-73, by Joseph Baxendell, F.R.A.S.

PARIS

Academy of Sciences, December 27, 1876.—Vice-Admiral Paris in the chair.—The following papers were read:—On the analysis of pyrogenic gases, by M. Berthelot.—On some derivatives of dialkol by M. Wurtz.—Note by M. Chevreul on his more recent works. One is a résumé of the history of matter from the atomists and Greek Academicians down to Lavoisier. Another relates to experiments meant to show the difference of absolute black from material black.—On the secular displacements of the orbit of the eighth satellite of Saturn (Japhet), by M. Tisserand.—Researches on the velocity of the wind, made at the observatory of the Roman College, by P. Secchi. He gives a table of observations from 1862 to 1876, with Robinson's anemometer and a meteorograph. The general daily mean for the whole year is 197.5 km. It differs little from month to month, but the horary distribution is very different in the summer and the winter months. The velocity is greatest in March, least in September. But P. Secchi does not take his figures as representing the absolute velocity of wind in the country, as the College is in a low part of the city; observations on Monte Cavo will be better. He adds tables of mean hourly velocity in the different months.—On the project of an irrigation canal from the Rhone, by M. de Lesseps. The canal (schemed by M. Dumont) is estimated to cost 110 million francs; the irrigable surface (in five departments) might produce annually 450,000 tons of hay and support at least 100,000 additional head of large cattle. The scheme would also permit of submersion of the vines. It could be completed in four years.—M. Faye presented the *Annuaire du Bureau des Longitudes* for 1877, and noted improvements in it.—New measurement of the meridian of France, by M. Perrier. The operations now extend, in a continuous system, from the frontier of the Pyrenees

to the Department of Loiret; there are thirty-nine stations.—On the absorbent power of wood charcoal for sulphide of carbon, and on the employment of sulphocarbonic charcoal for the destruction of phylloxera, by M. Laureau. M. Kvassery announced that the vines of Hungary are greatly threatened by Phylloxera.—Study on the reduction of a system of forces, of constant amount and direction, acting on determinate points of a solid body, when this body changes its orientation in space, by M. Darboux.—New theorems in higher arithmetic, by M. Lucas.—Enumeration of various theorems on numbers, by M. Proth.—Third note on the theory of the radiometer, by Mr. Crookes.—Researches on the coefficient of capillary flow, by M. Guerout. This coefficient is found to be smaller, in the same series, the more of carbon the substances contain. The author proved this before for monoatomic alcohols and homologous derivatives of benzine; it is here extended to fatty acids and ethers from the same alcohol, and ethers formed by union of the same organic acid with different alcohols of the fatty series. The coefficient for ethers is much higher than that of the alcohols or acids producing them; the introduction of an organic radical into the molecule of an alcohol raises its fluidity considerably. The determination of this coefficient establishes a sort of classification among isomeric bodies.—Practical study on gluten and its determination in the dry state, by M. Lailler.—Researches on the physiological properties and the mode of elimination of bromhydric ether, by M. Rabateau. This agent has properties intermediate between those of chloroform, bromoform, and ether.—Formation of the heart in the chicken, by M. Daresté.—On a *Balenoptera borealis* caught at Biarritz in 1874, by M. Fischer. This is the rarest of European species; only five examples have been known.—On a new globular state of quartz entirely crystallised in only one crystallographic direction, by M. Michel Levy. It is probable that the silica of this globular quartz was isolated in the paste before the end of the movement of effusion which produced the fluidity. The example furnishes a new combination of the colloid and crystalline states of silica.—Note on organic powders of the air, by M. Marié-Davy. The meteorological observatory of Montsouris has been charged by the Municipal Council of Paris to make a regular study of the dust of the air, the ground, and the water in various quarters of Paris, commencing with the new year. The author describes some preliminary observations relating to a recent epidemic.—On a maximum of falling stars, already indicated, in the month of December, by M. Chapelas.

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